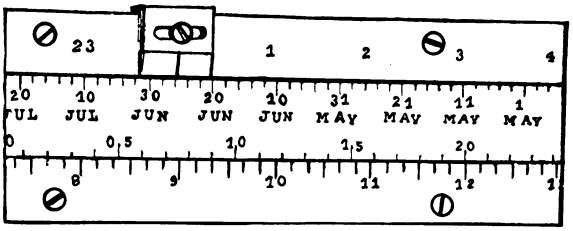
THE BURNS' SLIDE RULE.

For the purpose of easily and rapidly checking the computed Greenwich mean time of observations made at the Lick Observatory, a slide rule has been designed by Dr. BURNS.

The difference between Greenwich mean time and the sidereal time at any place is a difference of scale and zero point, and is, therefore, directly subject to slide rule computation. If two scales whose divisions are proportional to sidereal time and to mean solar time, respectively,—the one divided in hours and minutes, the other in decimals of a day,—be placed side by side and the zero points properly related, the local sidereal time and the corresponding Greenwich mean time will coincide on the scales.

The BURNS' rule is similar in form to the ordinary slide rule. At the right-hand end and just above the slide is an adjustable index mark. On the upper edge of the slide is a



SECTION OF DR. BURNS'S SLIDE RULE FOR REDUCING LOCAL SIDEREAL TO GREENWICH MEAN TIME.

scale of days beginning with January 1st at the right-hand end. The divisions are tenths of an inch and each one represents two days. On the lower edge of the slide is a decimal scale reading from 0.000 to 1.000 of a mean solar day. The position of the zero point of this scale depends on the longitude of the observatory. Just below the slide is the scale of sidereal time reading to minutes. Zero hours is at the left-hand end.

To set the rule for any year, the Greenwich mean time for a given instant of local sidereal time is computed. The slide is then moved until this Greenwich mean time coincides with the corresponding local sidereal time. The index is then set at the day and the adjustment of the rule is complete. It is ready

for any observation during that year unless it be a leap year, in which case the index must be reset after February 28th.

Then, to find the Greenwich mean time of any observation during that year, the slide is moved until the day of the observation is at the index. The Greenwich mean time will be found to coincide with the sidereal time on the lower scales.

For the later months of the year the slide would be drawn almost out so that only a small range could be read, and this range would not include all the hours of darkness. To overcome this difficulty, another index is placed in the middle of the rule. This second index is shown in the cut; only the central section of the rule is shown. For use with this index another set of hour numbers is printed along the top of the rule, but the same sidereal scale is used with both indices.

The rule is twenty inches in length and gives the thousandths of a day correctly. A larger rule accurately made and carefully used would give the fourth place. G. W. MOFFITT.

November, 1911.

COMET NOTES.

It is not often that such an abundance of cometary material offers itself for observation as has been the case during the past three months. Comet Kiess is at present far south of the equator, visible only to observers in the southern hemisphere. A new comet was discovered by QUENISSET at Juvisy on the evening of September 25th. It has been visible in a small telescope, but at no time became bright enough to be seen with the unaided eye. It is at present too far south to be observed except from the southern hemisphere. BORRELLY'S periodic comet (1905 II) has been visible in large telescopes south of the equator, and is rapidly moving within reach of observers in the northern hemisphere, but does not promise to become a naked-eye object.

Comet Beljawsky was discovered on September 29th in Russia, and independently discovered by four or five observers in America, and doubtless by a number of others in other parts of the world. Owing to its proximity to the Sun, it was at no time very favorably placed for observation; it was, however, quite a conspicuous object for a few days in the morning sky,